

## CLAIMS

1. A method for detecting the presence of catalytically active and catalytically inactive methylthioadenosine phosphorylase (MTAse) in mammalian cells comprising
  - 5 (a) obtaining an assayable sample of cells which are suspected of being MTAse deficient,
  - (b) adding oligonucleotide probes which will specifically hybridize to any of the MTAse encoding nucleic acid present in the sample under conditions which will allow the probes to detectably hybridize to any such  
10 nucleic acid present in the sample, and
  - (c) detecting whether the MTAse encoding nucleic acid is present in the sample, wherein the presence of said nucleic acid is indicative of the presence of catalytically active or inactive MTAse in a cell.
2. A method according to Claim 1 comprising further the step of subjecting the sample to conditions favoring the selective amplification of a nucleic acid which will encode for MTAse and selectively amplifying any MTAse encoding nucleic acid present in the sample.
3. A method according to Claim 1 wherein the cells are derived from a known malignancy.
4. A method according to Claim 3 wherein the cells are also assayed for MTAse catalytic activity.
5. A method according to Claim 1 wherein the probes are derived from the nucleotide sequence contained in SEQ. ID. No. 1.

6. A method according to Claim 2 wherein the conditions employed comprise a polymerase chain reaction.
7. An isolated polynucleotide which encodes MTase having the nucleic acid sequence shown in the Sequence Listing appended hereto as SEQ.ID.No. 1.
8. A polynucleotide according to Claim 7 having a nucleotide sequence substantially similar to the sequence contained in SEQ.ID No. 1.
9. A recombinant expression vector containing the polynucleotide of Claim 7.
10. Methylthioadenosine phosphorylase (MTase) encoded by the nucleic acid whose nucleotide sequence is set forth in SEQ.ID.No.1, wherein the nucleic acid is expressed by a recombinant expression vector.
11. A recombinant expression vector containing peptide encoding fragments of the polynucleotide of Claim 7.
12. MTase peptides expressed by the recombinant expression vector of Claim 11.
13. Antibodies produced through immunization of an animal with the MTase peptides of Claim 12.
14. Antibodies according to Claim 13 wherein the antibodies are monoclonal antibodies produced by hybridomas formed from cells of the immunized animals.
15. Synthetic MTase or MTase peptide fragments.

16. Antibodies produced through immunization of an animal with the MTase or MTase peptide fragments of Claim 15.